

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 09/964,410

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. By this Amendment, Applicant has added new claims 17-20. Thus, claims 1 and 3-20 are now pending in the application with claim 9-13 being allowed. In response to the Office Action, Applicant respectfully submits that the pending claims define patentable subject matter.

Claims 1 and 5 are newly rejected under 35 U.S.C. § 102(b) as being anticipated by Davies et al. (USP 5,345,222; hereafter “Davies”). Claims 3, 4, 6, 7 and 14-16 are newly rejected under 35 U.S.C. § 103(a) as being unpatentable over Davies. Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Davies in view of Hadden et al. (U.S. Patent No. 5,223,851; hereafter “Hadden”). Applicant respectfully traverses the prior art rejections.

Davies is directed to an electronic article surveillance system including a core-wound drive coil which produces an AC magnetic interrogation field, and a detection coil provided on one side with at least one element of a screening material, which detection coil detects an AC magnetic response field generated by a magnetically active tag or marker which is subjected to the interrogation field when the tag or marker comes in proximity with the detection coil. As shown in Figures 2, 6a and 6b, a screened air-cored coil 25 includes shield 24 consisting of first and second components 61, 62, wherein the second component 62 is a larger, electrically conductive shield placed behind the first component 61 and covering all or most or most of the area enclosed by a drive coil 63. The first component 61 has a slit 64 or insulated gap and is a relatively thick section of low coercivity material placed close to but behind the drive coil 63. The purpose of the first component 61 is to reduce the field by magnetic flux conduction at the

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point where it is strongest: i.e. directly behind the drive coil 63. The magnetic flux which would normally pass into objects behind the coil 63 is diverted into the low reluctance component, and hence is confined and controlled. The purpose of the second component 62 is to reduce the rearward residual weaker field, not deflected by the first component 61, by eddy current opposition.

Independent claim 1 recites:

a converger, including a conductor which converges a magnetic flux of an electromagnetic wave, the converger having a through hole, into which the magnetic flux is converged, at a center portion of the conductor, and a cutout extending from a part of the through hole to an outer periphery of the conductor; and

a converter, which converts the converged magnetic flux into voltage.

Independent claim 14 recites:

a converger, including a conductor which converges a magnetic flux of an electromagnetic wave; and

a converter, which converts the converged magnetic flux into voltage, the converter being operable independently from a ground potential.

With regard to claims 1 and 14, the Examiner alleges that Davies discloses all of the features of the claimed invention via the magnetic screen shown in Figures 6a and 6b. In particular, the Examiner alleges that the conductive plate 61 and the coil 63 in Davies respectively correspond to the claimed converger and the claimed converter. However, although the conductive plate 61 is formed with a through hole and a cutout, the conductive plate 61 is provided to reduce the magnetic field at the point where it is directly behind the coil 63 (see Col. 3, Lines 62-65).

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Therefore, the conductive plate 61 does not converge the magnetic field (flux) as required by the claimed converger.

As shown in Figures 6a and 6b of Davies, the size of the coil 63 is substantially the same as the size of the conductive plate 61. When the conductive plate 61 is placed in a magnetic field, an eddy current is generated in the conductive plate 61. However, since the size of the through hole and the outer peripheral dimension of the conductive plate 61 are similar to each other (not different), the path length of the eddy current becomes substantially the same as the size of the coil 63. In this case, the magnetic field will not be converged as in the present invention.

It is well-known that the through hole must be sufficiently smaller than the path length of the eddy current. As shown in the drawings in the present application, the path length of the eddy current is at least one wavelength of the electromagnetic wave to be received. On the other hand, the size of the through hole or the coil is sufficiently smaller than the wavelength of the received electromagnetic wave (see page 16, lines 17-19, for example). Since Davies is directed to the electronic article surveillance system using kHz frequency, the size of the coil must be sufficiently smaller than the wavelength of the received electromagnetic field (km order). The path length of the eddy current generated in the conductive plate 61 must be the same accordingly. Thus, Applicant respectfully submits that it is evident the conductive plate 61 will not converge the magnetic field as claimed.

Accordingly, Applicant respectfully submits that independent claims 1 and 14, as well as dependent claims 3-8, 15 and 16, would not have been anticipated by or rendered obvious in

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view Davies because the cited reference does not teach or suggest all of the features of the claimed invention.

By this Amendment, Applicant has added new claims 17-20 in order to further define the claimed invention.¹ Applicant respectfully submits that the cited references do not teach or suggest the magnetic flux is converged by an eddy current flowing on the conductor so as to have a path length which is at least one wavelength of the electromagnetic wave, as required by claims 17-19. Further, Applicant respectfully submits the cited references do not teach or suggest the through hole has a size which is sufficiently smaller than the wavelength of the electromagnetic wave, as required by claims 17, 18 and 20. Lastly, Applicant respectfully submits the cited references do not teach or suggest a converter, which converts the converged magnetic flux into voltage, the converter having a size which is sufficiently smaller than the wavelength of the electric magnetic wave, as further required by 20.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

¹ The subject matter of new claims 17-20 is described at page 11, lines 3 - page 12, line 15, for example.

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